Amendments To The Claims:

~~Patent claims~~ What is claimed is:

1. **(Original)**

Holder for flat workpieces, in particular semiconductor wafers for mechanochemical polishing, which is coupled to a vertical driving spindle (22), with a circular housing, which has a ceiling portion (14) and a sidewall (12), a retaining ring (26, 32) which forms at least the lower part of the sidewall (12), a holding plate (16) from rigid material, situated on the bottom side of the housing, which is coupled to the spindle (22) and which has a top and a bottom side, a flexible, relatively thin membrane (36), which is attached to the bottom side of the holding plate (16) and forms with the latter more than three annular chambers (MK1 to MK6), arranged concentrically to the spindle axis, at least one first channel (46) inside the driving spindle (22), which is connectible to a regulated pressure source or to vacuum on its upper end and which is guided into the housing, several electrically controllable on-off valves (44, 108) in the housing, which are connected to the first channel (46) and via bores in the holding plate (16) to each one chamber (MK1 to MK6), and which are connected to an external electric control device via electric controlling lines and a rotational transducer (54), in order to generate a pressure profile varying in the radial direction during the polishing process.

2. **(Original)** Holder according to claim 1, characterised in that the holding plate (16) has a distribution channel system and the on-off valves (108) are mounted directly on the top

side of the holding plate (16) and that they are in connection with the distribution channel system.

3. **(Currently Amended)** Holder according to claim 1 ~~or 2~~, characterised in that pressure sensors (64, 98) are disposed in the housing, which are connected to the ring chambers (MK1 to MK6), and the output of which is guided to the outside by means of a sensor line via the rotational transducer (54).

4. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 3~~, characterised in that the ceiling portion (14) is stationary, whereas the remaining part of the housing rotates with the spindle (22), a stator (58) of a slip ring arrangement (54) is attached to the bottom side of the ceiling portion, a spigot (82) connecting the holding plate (16) with the driving spindle (22) keeps the annular rotor (56) of a slip ring arrangement (54) on the outer side, the slip rings thereof being connected to control lines of the on-off valves (44 and 108, respectively) and signal outputs of the pressure sensors (64 and 98, respectively) respectively.

5. **(Original)** Holder for flat workpieces, in particular semiconductor wafers for mechanochemical polishing, which is coupled to a vertical driving spindle (22), with a circular housing, which has a ceiling portion (14) and an annular sidewall (12), a retaining ring (26, 32) which forms the lower part of the sidewall (12), a holding plate (16) from rigid material, situated on the bottom side of the housing, which is coupled to the spindle (22) and which has a top and a bottom side, a flexible, relatively thin membrane (36), which is attached to the bottom side of the holding plate (16) and forms with the latter several annular chambers (MK1 to MK6), arranged

concentrically to the spindle axis, a pressure distribution device, which is selectibly connected to a controllable fluid source under pressure or vacuum and to the ring chambers (MK1 to MK6) and which controls the amount of the pressure in the individual ring chambers (MK1 to MK6), wherein the membrane (36) is impermeable in at least the region of the chambers (MK1) to (MK6), and the bottom side of the holding plate (16) has flat, concave deepenings (34), which delimit the chambers (MK1 to MK6) such that a pressure profile varying in the radial direction is generated for the polishing process via the pressure in chambers (MK1 to MK6), and an aspirating effect for the taken-up workpiece is generated via vacuum in at least one chamber (MK1 to MK6).

6. **(Original)** Holder for semiconductor wafers for mechanochemical polishing on a polishing dish having a polishing cloth, which is coupled to a vertical driving spindle (22), with a circular housing, which has a ceiling portion (14) and a annular sidewall (12), a retaining ring (26, 32) which forms the lower part of the sidewall and which has a radial, annular lower portion, the inner diameter of which delimits the diameter of the taken-up wafer (60), the retaining ring (26, 32) being adjustable in the housing vertically with respect to the holding plate (16) by means of a annular bellows (28) which is connectible to a pressurized fluid source, a holding plate (16) from rigid material, situated on the bottom side of the housing, which is coupled to the spindle (22) and which has a top and a bottom side, a flexible, relatively thin membrane (36), which is attached to the bottom side of the holding plate (16) and forms with the latter several annular chambers (MK1 to MK6), arranged concentrically to the spindle axis, a pressure distribution device, which is connected to the controllable fluid source under pressure or to vacuum and to the

ring chambers (MK1 to MK6) and by which the amount of the pressure in the individual ring chambers (MK1 to MK6) is controlled, wherein the outer diameter of the membrane (36) is larger than the inner diameter of the radial portion of the retaining ring (26, 32) and a radial outer pressure chamber (MK7) is formed between the edge regions of membrane (36) and holding plate (16), which acts either on the radial portion of the retaining ring (32) or on a separate ring, through which a pressure can be generated directly on the polishing cloth (76) radially outside the wafer (60), depending on the pressure in the outer ring chamber (MK7).

7. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 6~~, characterised in that the membrane (36) has several annular expansion bellows (141, 114a), concentrical to the spindle axis on its top side, which are fixed on the bottom side of the holding plate (16) and permit a stroke of the membrane (36) upon pressure in the ring chambers (MK1 to MK7) in order to attain path-independent pressure control.

8. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 7~~, characterised in that the membrane (36) has annular hollow elevations, disposed concentrically to the spindle axis on its top side, which have an annular slit on the top side and which are accommodated by annular recesses on the bottom side of the holding plate (16), the elevations accommodate clamping rings (122, 134, 136) which have a shoulder pointing towards the upside which extends through the slit and is drawn against the bottom of the annular recess (120) by means of screws on the holding plate (16) in order to fix the elevations in a clamping manner and to tighten the annular slits and that the clamping rings have at least one vertical channel (126) which is connected to the

pressure distribution device, the interior of the elevations forming first ring chambers and second ring chambers being formed between adjacent elevations, which are also connected to the pressure distribution device via vertical bores (140) in the holding plate (16).

9. **(Original)** Holder according to claim 8, characterised in that the elevations are formed by the extension bellows (114a), which permit a relatively large stroke of the membrane (36) when the ring chambers (MK1 to MK7) are pressurised, in order to attain path-independent pressure control.

10. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 9~~, characterised in that the holding plate (16) is constituted by three single plates (88, 90, 100) lying upon another, wherein the membrane (36) is attached on the bottom plate (88) and the middle and the upper plate (90, 100) form a distribution channel system between each other, which is connected to individual ring chambers (MK1 to MK7) of the membrane and is connected to the pressure distribution system and the on-off valves (44, 108), respectively, via vertical bores in the upper single plate (100).

11. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 10~~, characterised in that the upper and the middle single plate (90, 100) are connected through a screwing bond with a spigot (82), which is connected with the spindle, and the lower single plate (88) is screwed on a block (96), seated on the upper single plate (100), and is separately detachable with accommodated membrane (36).

12. **(Currently Amended)** Holder according to claim 11, characterised in that the retaining ring has an annular cylindrical portion (26), which is connected via a lateral screwing

bond (152) with the holder (10) and has a ring portion (32) screwed on to the bottom side, which points radially towards the inside.

13. **(Currently Amended)** Holder according to claim 3 ~~and 11~~, characterised in that the pressure sensors (98) are attached to at least one block (96), and are in connection with the ring chambers (MK1 to MK7) via channels in the block (96) and in the holding plate (16).

14. **(Currently Amended)** Holder according to claim 10 ~~any one of claims 10 to 13~~, characterised in that the inputs of the on-off valves (44 and 108, respectively), are connected to the channel (46) in the spindle (22) via channels in the holding plate (16) and via a vertical bore in the spigot (82).

15. **(Currently Amended)** Holder according to claim 1 ~~any one of claims 1 to 14~~, characterised in that the membrane (36) has a hole (68) in its centre, which is connected to a further channel (70) in the spindle (22) via a bore (172, 110) in the holding plate (16), the further channel (70) being selectively connectible to a source of pressure or vacuum.

16. **(Original)** Method for taking up a wafer from its pick-up position with a holder according to claim 1, characterised by the following steps: the holder is lowered down on the wafer, the middle chamber (MK1) is filled with a pressurised fluid, until a predetermined pressure has been reached, the on-off valves (44) are triggered one after the other such that the chambers (MK2 to MK6) are gradually filled with pressurised fluid, proceeding from the interior to the exterior, subsequently all the chambers (MK1 to MK6) are switched to be released from pressure, thereafter a vacuum is applied to all the chambers (MK1 to MK6),

proceeding from the interior to the exterior, and after a predetermined delay time, the holder lifts up the wafer from the pick-up position.

17. **(Original)** Method according to claim 16, wherein the membrane has a hole according to claim 15, characterised in that at first vacuum is applied to the hole (68) before the vacuum is applied on the chambers (MK1 to MK6).